

Caring for Health, the Environment . . . and the Bottom-Line

Hospital systems face constant pressure to contain costs while maintaining excellent standards of care. For many hospitals, investing to save energy offers outstanding opportunities, providing fast paybacks and ongoing bottom-line returns. A case in point is the University of Texas Medical Branch at Galveston (UTMB). An 800-bed teaching and research hospital system, UTMB is housed on an 84-acre campus in Galveston, Texas, encompassing 70 major buildings, more than 13,000 employees and 2,500 students, and serving nearly 2,200 patients on an average day. The annual energy bills for this complex totaled more than \$17 million in 1999, the year UTMB began an institution-wide comprehensive program that has yielded a 15 percent savings in energy use.

Planning for the program had begun two years earlier, laying out a three-pronged attack on energy waste: upgrading technologies, enhancing operations, and changing mindsets and behaviors. The plan also addressed the paramount need to sustain high quality and productivity in patient care, research, and teaching during the program implementation.

Pinpointing the Opportunities

After considering a range of procurement options, including performance-based and traditional design-bid contracting, UTMB pursued a design-build approach to contracting for technical support. "We identified several excellent energy-performance contractors who were open to proposing on a design-bid basis," explains Marcel Blanchard, Utilities Operations Director for UTMB. "Our ultimate selection was Reliant Energy Solutions. Because the technical risks of the project were relatively low, we felt comfortable assuming the risks, which would allow UTMB to realize the full upside returns."

As an early step, UTMB had engaged an independent engineering consultant to conduct an energy audit, resulting in a "wish list" of potential cost-saving improvements. Using an ROI analysis and value assessment, the project team sharpened the list, pinpointing the technical projects that would be tackled in the initial five-year phase of the program.

Among the technical projects, lighting retrofits yielded the largest overall cost savings. Other key elements included upgrading the energy management system, performing power factor corrections, upgrading cooling towers, replacing chillers and installing a new chilled water distribution system, and upgrading boilers. In partnership with the local energy office, UTMB also installed 20-kilowatt-capacity photovoltaic panels on a parking garage, with connections to the utility grid.

Collaborative planning by the project team identified valuable synergies. For example, in developing an approach to serve the back-up power supply needs of a UTMB research facility, the team recognized that by making the equipment portable, they could also enhance readiness to respond to hurricanes or other emergencies anywhere on campus. The solution includes a new 200-ton chiller and a 700-kilowatt generator, mounted on mobile platforms.



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Operational considerations went hand in hand with the energy project. Several equipment upgrades—including the replacement of chillers and cooling towers—had already been targeted in UTMB's capital improvement program. By evaluating the proposed capital improvements from an energy perspective, the team was able to identify opportunities to gain efficiencies and realize savings. Because UTMB is in an ozone non-attainment zone, the team also looked for energy solutions—including low-NO_x boilers with economizers—that enabled cost-effective compliance with regulatory standards.

Ongoing operations and maintenance practices have also been geared to energy savings. Procurement specifications for lighting, for example, call for upgrading from magnetic to electronic ballasts as replacements are needed.

Making a Real Difference

Along with technology and operational changes, the third prong of the UTMB effort was to change behaviors and attitudes about energy. "In a system as large as ours, it is too easy for people to think energy is not their concern," says Blanchard. "It's an 'all-utilities-paid' philosophy, where energy is always someone else's bill. What we found is that when people understand how substantial the savings can be and how much individual actions matter, they are motivated to do the right things."

Strong leadership, coupled with participative opportunities, were key to the change in philosophy. With the support of UTMB President John D. Stobo, leaders of all major campus functions formed an energy council, charged with bringing ideas and awareness to the UTMB community. "We engaged all the groups that could make a difference," Blanchard recounts.

"Certainly we couldn't disrupt productivity in any way. Impairing the health care, teaching, and research operations of the system would more than offset the benefits of any energy savings. But by involving the people on the front lines, we ended up with great energy-saving measures that cost absolutely nothing to implement, with no compromises in productivity."

Staff volunteers formed "power teams" to identify and promote ways to cut energy use in each major building, through such simple actions as turning off unneeded office equipment and lights. Another critical group brought together "strategic energy partners," including campus custodians, maintenance staff, and police, to continually share information on opportunities and best practices. Small changes, such as not turning on classroom lights until needed, are adding up to ongoing savings.

As its initial five-year plan period wraps up, UTMB has achieved the targeted 15 percent reduction in energy use and is moving toward a self-funded program of ongoing energy improvements.

A new energy master plan is under discussion.

"Hospitals are continually pressured to operate more efficiently and use resources more wisely," concludes Blanchard. "Some solutions are painful, others are not. Energy savings are painless. In our case at UTMB, we're realizing financial savings, not only through avoided energy costs but also reduced maintenance expenses. We're enhancing the patient care environment. And at the same time, we're conserving limited natural resources, which helps the immediate community as well as the total environment."

A portable back-up power supply enhances emergency readiness.

Rooftop PV panels power lighting for a UTMB parking garage.

